

# Giardiasis



## Section 1:

## ABOUT THE DISEASE

### A. Etiologic Agent

*Giardia lamblia* is a protozoan parasite that has two forms: the infectious cyst and the invasive trophozoite. Infected persons can shed both trophozoites and cysts in stool.

### B. Clinical Description

Symptoms of giardiasis are variable but typically include watery, foul-smelling diarrhea. Abdominal cramps and a “bloated” feeling with excess gas often accompany the diarrhea. The diarrhea can be chronic or intermittent, and it can be accompanied by fatigue and steatorrhea (fatty stools). Anorexia, combined with malabsorption, can lead to significant weight loss, failure to thrive, and anemia. However, many infections are asymptomatic. In addition, the nature of immunity is uncertain. Some people with regular exposure may develop some degree of resistance to illness. Treatment failure is not uncommon (~10% of the time), but is not indicative of drug resistance of the parasite. A repeat course of the same medication may be indicated.

### C. Vectors and Reservoirs

Humans and some animals (dogs, cats, rodents, cattle, deer, elk, beaver, and muskrats) are reservoirs, although the public health importance of most nonhuman reservoirs is debated. Overall, humans are the most important source of other human infections. Wildlife, such as deer, elk, and beaver, may be important in contaminating surface water supplies; domestic animals (e.g., dogs) may be a source for some human exposures.

### D. Modes of Transmission

The principal mode of transmission of giardiasis is from person to person. Persons become infected by fecal-oral transfer of cysts from the feces of an infected individual, especially in institutions and daycare centers. Transmission can also occur from person to person through certain types of sexual contact (e.g., oral-anal contact). Localized outbreaks may occur from fecally contaminated water, such as stream/lake waters and swimming pools that are open to contamination by human and animal feces. Eating food contaminated by an infected food handler can be a source, but this has been rarely documented.

### E. Incubation Period

The incubation period can vary from 3–25 days (or longer); the median is 7–10 days.

### F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes the organism, which may be many months.

### G. Epidemiology

Giardiasis has a worldwide distribution. Children are infected more frequently than adults. Prevalence is higher in areas of poor sanitation and in facilities with children who are not toilet trained, especially daycare centers. Surveys conducted in the U.S. have demonstrated prevalence rates of *Giardia* in stool specimens that range from 1–30%, depending on the location and age. Cases occur more commonly in the summer and fall months.

## H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism.



### Section 2:

## REPORTING CRITERIA AND LABORATORY TESTING

### A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report a case that meets any of the following criteria:

- ◆ Demonstration of *G. lamblia* cysts in stool;
- ◆ Demonstration of *G. lamblia* trophozoites in stool, duodenal fluid, or small-bowel biopsy; or
- ◆ Demonstration of *G. lamblia* antigen in stool by a specific immunodiagnostic test (e.g., enzyme immunoassay [EIA]).

*Note: See Section 3C for information on how to report a case.*

### B. Laboratory Testing Services Available

The MDPH State Laboratory Institute (SLI) performs direct fluorescent antibody (DFA) testing for *Giardia* on clinical specimens associated with case clusters or outbreaks, and on other clinical specimens submitted with pre-approval from the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. This DFA assay will also identify *Cryptosporidium* oocysts that may be present in the same specimen. Collection and submission of up to three specimens over a ten-day period will increase the likelihood of parasite detection. Stools should be submitted in the parasite specimen collection kits distributed by the SLI. Use of any other collection kits must be approved by the SLI prior to specimen submission.

**For additional information on specimen submission and testing, call the SLI Parasitology Laboratory at (617) 983-6661.**



### Section 3:

## REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

### A. Purpose of Surveillance and Reporting

- ◆ To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- ◆ To identify transmission sources of public health concern (e.g., a restaurant or a contaminated public water supply), and to stop transmission from such sources.

## B. Laboratory and Health Care Provider Reporting Requirements

Giardiasis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of giardiasis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of giardiasis infection shall report such evidence of infection directly to the MDPH within 24 hours.

## C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

### *Reporting Requirements*

MDPH regulations (*105 CMR 300.000*) stipulate that giardiasis is reportable to the LBOH and that each LBOH must report any case of giardiasis or suspect case of giardiasis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS) using an official MDPH *Enteric Disease Case Report Form* (found at the end of this chapter). Refer to the *Local Board of Health Timeline* at the end of this manual's *Introduction* section for information on prioritization and timeliness requirements of reporting and case investigation.

### *Case Investigation*

1. It is the responsibility of the LBOH to complete a MDPH *Enteric Disease Case Report Form* (found at the end of this chapter) by interviewing the case and others who may be able to provide pertinent information. Much of the information required on the form can be obtained from the health care provider or from the medical record.
2. Use the following guidelines to assist in completing the form:
  - a. Accurately record the demographic information, date of symptom onset, symptoms, and medical information.
  - b. When asking about exposure history (e.g., food, travel, or activities), if possible, use the entire incubation period range of giardiasis (3–25 days). Specifically, however, focus on the 7–10 days prior to the case's onset, which is the usual range.
  - c. If possible, record any restaurants at which the case ate, including food item(s) consumed and date(s) of consumption. If you suspect that the case became infected through food, use the MDPH *Foodborne Illness Complaint Worksheet* (found at the end of this chapter) to facilitate recording additional information. It is requested that the LBOH fax or mail this worksheet to the MDPH Center for Environmental Health, Food Protection Program (FPP); see top of worksheet for fax number and address. This information is entered into a database to help link other complaints from neighboring towns, thus helping to identify foodborne illness outbreaks. *Note: This worksheet does not replace the MDPH Enteric Disease Case Report Form.*
  - d. Ask questions about travel history and outdoor activities to help identify where the case became infected.
  - e. Ask questions about water supply because giardiasis may be acquired through water consumption.
  - f. Household/close contact, pet or other animal contact, daycare, and food handler questions are designed to examine the case's risk of having acquired the illness from or the case's potential for transmitting it to these contacts. Determine whether the case attends or works at a daycare facility and/or is a food handler.
  - g. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please fill out the case report form with as much information as you have gathered. Please note on the form the reason(s) why it could not be filled out completely.

3. After completing the case report form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to confirm receipt of your fax. The mailing address is:

**MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)**  
**305 South Street, 5<sup>th</sup> Floor**  
**Jamaica Plain, MA 02130**  
**Fax: (617) 983-6813**

4. Institution of disease control measures is an integral part of case investigation. It is the responsibility of the LBOH to understand, and if necessary, institute the control guidelines listed in Section 4.



## Section 4:

# CONTROLLING FURTHER SPREAD

### A. Isolation and Quarantine Requirements (*105 CMR 300.200*)

Food handlers with giardiasis must be excluded from work.

*Note: A case of giardiasis is defined by the reporting criteria in Section 2A of this chapter.*

#### *Minimum Period of Isolation of Patient*

After diarrhea has resolved, food handling facility employees may return to work only after producing one negative stool specimen. If a case has been treated with an antimicrobial, the stool specimen shall not be collected until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen is required prior to returning to work.

#### *Minimum Period of Quarantine of Contacts*

Contacts with diarrhea who are food handling facility employees shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handling facility employees shall be required to produce 2 negative stool specimens, 24 hours apart. No restrictions otherwise.

*Note: A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider. See Glossary (at the end of this manual) for a complete definition.*

### B. Protection of Contacts of a Case

None.

## C. Managing Special Situations

### *Daycare*

Since giardiasis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of giardiasis in a daycare setting carefully. General recommendations include:

- ◆ Children with giardiasis who have diarrhea should be excluded until their diarrhea is gone.
- ◆ Children with giardiasis who have no diarrhea and are otherwise not ill may be excluded or they may remain in the program, if special precautions are taken.

Since most staff in childcare programs are considered food handlers, those with *Giardia* in their stools (symptomatic or not) can remain on-site but must not prepare food or feed children until their diarrhea is gone and they have one negative stool test (collected at least 48 hours after completion of antibiotic therapy, if antibiotics are given) (per 105 CMR 300.200).

### *School*

Since giardiasis may be transmitted from person to person through fecal-oral transmission, it is important to investigate cases of giardiasis in a school setting carefully. The MDPH *Comprehensive School Health Manual* provides detailed information on case follow-up and control in a school setting. General recommendations include:

- ◆ Students or staff with giardiasis who have diarrhea should be excluded until their diarrhea is gone.
- ◆ Students or staff with giardiasis who do not handle food, have no diarrhea or mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- ◆ Students or staff who handle food and have giardiasis infection (symptomatic or not) must not prepare food until their diarrhea is gone and they have 1 negative stool test (collected at least 48 hours after completion of antimicrobial therapy, if antimicrobial agents are given) (per 105 CM 300.200).

Refer to the MDPH *Comprehensive School Health Manual* for complete guidelines on handling diseases spread through the intestinal tract.

### *Community Residential Programs*

Actions taken in response to a case of giardiasis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with giardiasis should be placed on standard (including enteric) precautions until their symptoms subside and they test negative for *Giardia*. (Refer to the MDPH Division of Epidemiology and Immunization's *Control Guidelines for Long-Term Care Facilities* for further actions. A copy can be obtained on the MDPH website at [www.mass.gov/dph/cdc/epii/ltcf/ltcf.htm](http://www.mass.gov/dph/cdc/epii/ltcf/ltcf.htm) or by calling the MDPH Division of Epidemiology and Immunization at [617] 983-6800 or [888] 658-2850.) Staff members who provide direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions (per 105 CMR 300.200). See Section 4A for more information. In addition, staff members with giardiasis who are not food handlers should not work until their diarrhea is gone.

### *Reported Incidence Is Higher Than Usual/Outbreak Suspected*

If the number of reported cases of giardiasis in your city/town is higher than usual or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle (e.g., water, food, or association with a daycare center) should be sought, and applicable preventive or control measures should be instituted (e.g., removing an implicated food item from the environment). Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800 or (888) 658-2850. The Division can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

*Note: Refer to the MDPH Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. Copies of this manual have been made available to the LBOH. It can also be located on the MDPH website in PDF format at [www.mass.gov/dph/fpp/refman.htm](http://www.mass.gov/dph/fpp/refman.htm). For the most recent changes to the Massachusetts Food Code, contact the FPP at (617) 983-6712 or through the MDPH website at [www.mass.gov/dph/fpp](http://www.mass.gov/dph/fpp).*

## **D. Preventive Measures**

### *Personal Preventive Measures/Education*

To avoid exposure, recommend that individuals:

- ◆ Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, and after changing diapers.
- ◆ Wash own hands as well as the child's hands after changing diapers, and dispose of the diaper in a sanitary manner.
- ◆ Wash own hands when caring for someone with diarrhea. Hands should be scrubbed with plenty of soap and water after cleaning the bathroom, after helping the person use the toilet, or after changing diapers, soiled clothes, or soiled sheets.
- ◆ Be aware of the risks of drinking water from streams or lakes when hiking or camping. Bringing water to a full, rolling boil is sufficient to kill *Giardia*. Several filters are also available that remove *Giardia* cysts. Additionally, some chemical disinfectants are effective against *Giardia*.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of giardiasis to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

### *International Travel*

Travelers to developing countries should:

- ◆ "Boil it, cook it, peel it, or forget it."
- ◆ Drink only boiled water or bottled carbonated beverages, keeping in mind that bottled carbonated water is safer than bottled non-carbonated water.
- ◆ Ask for drinks without ice, unless the ice is made from boiled water. Avoid popsicles and flavored ice that may have been made with contaminated water.
- ◆ Eat foods that have been thoroughly cooked and are still hot and steaming.



- ◆ Avoid raw vegetables and fruits that cannot be peeled. Vegetables like lettuce are easily contaminated and are very hard to wash well.
- ◆ Peel their own raw fruits or vegetables and not eat the peelings.
- ◆ Avoid foods and beverages from street vendors.

**A *Giardia* Public Health Fact Sheet is available from the Division of Epidemiology and Immunization or on the MDPH website at [www.mass.gov/dph](http://www.mass.gov/dph). Click on the “Publications and Statistics” link, and select the “Public Health Fact Sheets” section under “Communicable Disease Control.”**

*Note: For more information regarding international travel, contact the Centers for Disease Control and Prevention (CDC) Traveler’s Health Office at (877) 394-8747 or online at [www.cdc.gov/travel](http://www.cdc.gov/travel).*



## ADDITIONAL INFORMATION

The formal CDC surveillance case definition for giardiasis is the same as the criteria outlined in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2A.

*Note: The most up-to-date CDC case definitions are available on the CDC website at [www.cdc.gov/epo/dphsi/casedef/case\\_definitions.htm](http://www.cdc.gov/epo/dphsi/casedef/case_definitions.htm).*



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## **FORMS & WORKSHEETS**

*Giardiasis*

# Giardiasis

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## LBOH Action Steps

*This form does not need to be submitted to the MDPH with the case report form. It is for LBOH use and is meant as a quick-reference guide to giardiasis case investigation activities.*

LBOH staff should follow these steps when giardiasis is suspected or confirmed in the community. For more detailed information, including disease epidemiology, reporting, case investigation, and follow-up, refer to the preceding chapter.

- ☐ Notify the MDPH Division of Epidemiology and Immunization, at (617) 983-6800 or (888) 658-2850, to report any confirmed case(s) of giardiasis.
- ☐ Obtain laboratory confirmation.
- ☐ Identify potential exposure sources, such as a water source, diapered child, day care attendee, or food handler.
- ☐ Determine whether the case attends or works at a daycare facility and/or is a food handler.
- ☐ Identify other potentially exposed persons.
- ☐ Fill out the case report form (attach laboratory results).
- ☐ Send the completed case report form (with laboratory results) to the MDPH Bureau of Communicable Disease Control, Office of Integrated Surveillance and Informatics Services (ISIS).